

8. The 14 colleges of interest to a high school senior include 6 that are expensive, 7 that are far from home, and 2 that are both expensive and far from home.
- (a) If the student decides to select a college that is not expensive and close to home, how many selections are possible?
- (b) If the student decides to attend a college that is not expensive and close to home for his first two years and then transfer to a college that is not expensive but far from home, how many selections of the two colleges are possible?
9. The letters A, B, C, D, E, F, and G are written on cards. The cards are mixed and four cards are selected (without replacement) to make a password.
- (a) How many passwords are possible?
- (b) How many passwords contain no vowels?
- (c) How many passwords contain at least 1 vowel?
- (d) How many passwords end with a vowel?
10. Three couples are seated in a row of 6 seats. How many different seating arrangements:
- (a) Are possible?
- (b) Have no two women sitting next to each other?
11. A standard deck of 52 cards contains 4 suits (clubs, diamonds, hearts, and spades) with 13 cards in each suit (ace, 2, 3, 4, ..., 10, J, Q, K). A hand of 5 cards is dealt from a standard deck of 52 cards. How many different hands:
- (a) Are possible?
- (b) Contain exactly 4 spades?
- (c) Contain at least 4 spades?
- (d) Contain at least 4 cards from the same suit?
- (e) Contain at least 1 spade?
- (f) Contain at least 1 card from each suit?
12. A pizza restaurant offers small, medium, and large pizzas with 10 possible toppings.
- (a) How many different pizzas with exactly 3 different toppings are possible?
- (b) How many different pizzas are possible?
- (c) How many different pizzas with at least 1 topping are possible?

Answers

$$1. A^{-1} = \begin{bmatrix} -1 & 5 & 2 \\ -1 & 3 & 1 \\ \frac{1}{2} & -1 & -\frac{1}{2} \end{bmatrix}$$

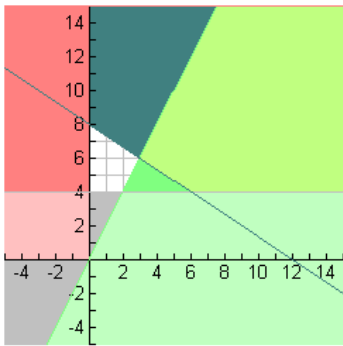
2. GOOD LUCK ON YOUR EXAM

$$3(a) \begin{bmatrix} 8 & 3 \\ 4 & -6 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 6 \\ -2 \end{bmatrix}$$

$$3(b) A^{-1} = \begin{bmatrix} \frac{1}{10} & \frac{1}{20} \\ \frac{1}{15} & -\frac{2}{15} \end{bmatrix}$$

$$3(c) \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} \frac{1}{2} \\ \frac{2}{3} \end{bmatrix}$$

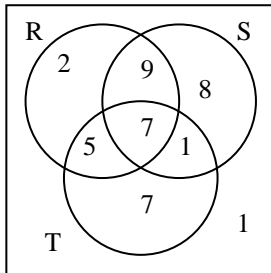
4. (The non-shaded area below)
Vertices: (0,4), (0,8), (3,6), & (2,4)



5. 1 inexpensive speaker assembly and 22 expensive speaker assemblies for a maximum income of \$3325

- 6(a) 140
- 6(b) 160

7(a)



7(b) 7

- 8(a) 3
- 8(b) 15

- 9(a) 840
- 9(b) 120

- 9(c) 720
- 9(d) 240

- 10(a) 720
- 10(b) 144

- 11(a) 2,598,960
- 11(b) 27,885
- 11(c) 29,172
- 11(d) 116,688
- 11(e) 2,023,203
- 11(f) 685,464

- 12(a) 360
- 12(b) 3,072
- 12(c) 3,069